

# NOMINATION FOR ENGINEERING HERITAGE RECOGNITION

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## RED BRIDGE, CAMPBELL TOWN



**Prepared by Graeme Nichols and Ted Pitman for  
Engineering Heritage Tasmania**

**March 2017**

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# HERITAGE AWARD NOMINATION FORM

The Administrator  
Engineering Heritage Australia  
Engineers Australia  
Engineering House 11 National Circuit  
BARTON ACT 2600

**Name of Work:** Red Bridge

**This work is nominated for an award under the Heritage Recognition Program of Engineers Australia.**

**Location:** High Street, Campbell Town, Tasmania 7210  
Grid Reference: 41.9329 °S, 147.4927 °E

**Owner:** Department of State Growth, Tasmania (Minister for Infrastructure)  
Level 1 Franklin Square Office, Hobart TAS 7000

The owner has been advised of this nomination and a letter of agreement is attached.

**Access to site:** High Street and Blackburn Park

**Nominating Body:** Engineering Heritage Tasmania

*Bruce Cole*  
Chair, Engineering Heritage Tasmania

## LETTER OF AGREEMENT FROM OWNER

Minister for Infrastructure  
Minister for Police, Fire and Emergency Management  
Level 1, Franklin Square Office HOBART TAS 7000  
Ph: (03) 6165 7686



25 AUG 2016

Dr Vicki Gardiner FRACI CChem ComplEAust  
General Manager - Tasmania  
Engineers Australia

By email: [VGardiner@engineersaustralia.org.au](mailto:VGardiner@engineersaustralia.org.au)

Dear Dr Gardiner

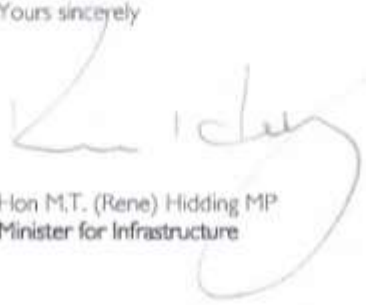
Thank you for your email of 15 August 2016 regarding permission to nominate Red Bridge at Campbell Town for an Engineering Heritage Award.

I can advise that I support the nomination of Red Bridge at Campbell Town as a candidate for an Engineering Heritage Marker and, on behalf of the Tasmanian Government, give approval for a nomination to be prepared.

Please contact the Department of State Growth's Acting Manager Asset Management, Mr Andrew Hargrave, on 6166 3440 or at [Andrew.hargrave@stategrowth.tas.gov.au](mailto:Andrew.hargrave@stategrowth.tas.gov.au) to progress the formal ceremony for unveiling of the heritage marker and interpretation panel.

I trust this information is of assistance to you.

Yours sincerely

  
Hon M.T. (Rene) Hidding MP  
Minister for Infrastructure

# INTRODUCTION

Red Bridge is an historic three span brick arch structure, completed in 1838 and in continuous use since then. It carries the Midland Highway over the Elizabeth River in Campbelltown, Tasmania. This highway forms the direct road link between Hobart and Northern Tasmania, and is part of the National Highway network. Whilst nearly all other towns have now been bypassed, the highway still runs down the main street of Campbell Town. In 2000 the arches were internally strengthened to carry contemporary heavy truck loading.

The construction of Red Bridge resulted from Lieutenant-Governor George Arthur's emphasis on road and bridge construction in the colony of Van Diemen's Land. This bridge replaced an earlier flood-prone earth and log causeway located some 200m downstream. The river was realigned into a narrower channel near the bridge, and the integral river training walls on both upstream and downstream sides are a feature of the bridge.

The project was the responsibility of Captain Alexander Cheyne, Director-General of Roads and Bridges, whose name is remembered on the bridge. There are no extant original drawings, but the designer of Red Bridge is believed to be renowned convict architect and engineer James Blackburn. The design shows great attention to aesthetic and architectural details. The construction supervisor on site was Captain Frederick Forth (who later succeeded Cheyne as Director-General of Roads and Bridges). The work was carried out by convict work gangs, chosen, where possible, to include the more willing and skilled workers. The work included the manufacture of the bricks on site.

## BASIC DATA

**Item Name:** Red Bridge

**Other Name:** Elizabeth River Bridge

**Location:** 41.9329 °S, 147.4927 °E

**Address:** High Street, Campbell Town, Tasmania 7210

**Suburb/Nearest Town:** Campbell Town

**State:** Tasmania

**Local Government Area:** Northern Midlands

**Owner:** Department of State Growth, Tasmania (Minister for Infrastructure)

**Former/Current Use:** Highway Bridge

**Designer:** Attributed to James Blackburn

**Maker/Builder:** Captain Alexander Cheyne, Captain Frederick Forth, and convict work gangs

**Year Started:** 1836

**Year Finished:** 1838

### **Physical Description:**

Red Bridge is a brick arch structure with three spans, each approximately 7.6m between springing points. The overall length is about 35m, and width between parapets about 8.5m. River training walls, each about 39m long, extend upstream and downstream from each end.

The arches are each formed by three rings of bricks, and are sprung from piers of ashlar faced sandstone. The spandrel walls and bridge parapets above are constructed in brick, with sandstone string course between, and sandstone parapet copings. The river training walls are in basalt, with brick parapets and sandstone pillars, string course and copings.

The distinctive red bricks, which gave rise to the bridge name, were manufactured on site, using clay from nearby. An estimated 1.5 million bricks were laid in the structure. They were laid in Flemish bond in the bridge parapet and English bond elsewhere. For the bridge parapet, darker overfired fired bricks were used for the headers to give a distinctive checkerboard pattern as an architectural feature.

### **Physical Condition:**

Following rehabilitation works carried out in association with the arch strengthening in 2000, the structure is generally in good condition.

**Modifications and Dates:**

Very few repairs are known to have been made to the bridge from its construction up till 2000.

Following concerns about the arch deflections occurring under heavy trucks, and the associated loss of mortar, an arch was load tested and analysed in 1994. The results led to a Conservation Plan being prepared, and funding obtained for bridge strengthening and rehabilitation works. These works were then carried out in 2000.

The arches were strengthened internally using the Cintec Archtec system, to carry SM1600 design live load. This involved installation of grouted stainless steel reinforcement bars in each brick arch, tangential to the curve. All the lost mortar in the arches was restored.

The rehabilitation works are detailed in the Historical Review.

**Historical Notes:** Refer to History below.

**Heritage Listing:** Permanently Registered

**Name:** Tasmanian Heritage Register

**Title:** Red Bridge

**Number:** 4941

**Date:** 28 June 2013

# HISTORICAL REVIEW

## Early European Settlement

In 1811 Governor Lachlan Macquarie visited Van Diemen's Land on a tour of inspection and travelled between Hobart Town and Port Dalrymple, naming a number of geographical features along the way. One of these was the Relief Creek which he renamed the Elizabeth River after his wife. To protect travellers and to encourage settlers to establish in the interior, he proposed a number of military posts be set up between the two settlements, including one at the Elizabeth River, and instructed his surveyor, James Meehan, to mark out a road. In 1821 when Macquarie again visited the colony, he selected the site of a town on the Elizabeth River, and named Campbell Town in honour of his wife's family.

During the summer the Elizabeth River could be crossed by a ford, but in the winter the rising waters of the river spread out over a wide area creating an almost impassable bog. This really only affected a few people until settlers began to spread out from the original towns and into the Midlands. The increase in traffic led to the construction early in 1822 of an earth and log causeway at the site of the ford at what is now the foot of Bridge Street (see Figure 2 in Early Photographs and Plans).

## Construction of Red Bridge

Between 1830 and 1834 there were numerous reports about the unsafe condition of the bridge at Campbell Town and, although it was patched up from time to time by the road party stationed at Ross, there were no funds to build a permanent structure. In 1834 the Inspector of Roads, Roderic O'Connor, reported the bridge in a 'most ruinous state' and that a better site could be found. In August 1836 Arthur announced the construction of a new bridge at Campbell Town along similar lines to that proposed for Perth. Governor Arthur laid the foundation stone for the new bridge at a public ceremony held in October 1836.

A site where the banks of the river were steeper than at the causeway crossing and in line with an existing street, High Street, was selected by Alexander Cheyne. Prior to the construction of the new bridge the river meandered south in a large loop, the entrance to which was immediately west of the bridge. Large training walls were constructed, and the river was diverted to a canal-like channel on a new route which bypassed the previous loop. A new street, the Esplanade, was constructed on the northern bank as an approach to the bridge, and to allow residents of the town access to the river to draw water.

The work was carried out under the supervision of Frederick Forth who was the Police Magistrate at Campbell Town. In August 1836, Forth asked for four brickmakers, two additional hands, and eight labourers to be returned to him from Ross to work on the bridge. At its peak, the project employed 220 men including five teams of brickmakers and a stone cutter.

The overseer of the brickmakers appointed in February 1837 was a ticket of leave man named Samuel Newton who was removed for misconduct the following November. In May 1837 Forth was able to take advantage of a probationary sentence being imposed on a stone cutter named Charles Goodall by having him transferred to Campbell Town where he would be 'very useful at the Bridge Works'. [POL 39/1, Forth to Cheyne, 6 February 1837, 27 November 1837, 18 May 1837.] Some materials used in temporary works came from the recently completed Ross Bridge construction, 13 km south. In February 1837, Forth reminded



Cheyne that Captain Turned had not yet taken steps 'to take down the centres [arch frameworks] of Ross Bridge, or to save the iron attached to them' and asked for a blacksmith 'to adapt both the iron and timber to the construction of Campbelton Bridge'. [POL 39/1, Forth to Cheyne, 6 February 1837.]

Test holes drilled in the road surface of the bridge in 1988 revealed the original infill and running surface to be river gravel with water worn cobbles and a commonly 15-20% sandy clay binder, over a convex brick surface. [Department of Infrastructure, Energy and Resources File B 1349, report dated 8 April 1988.]

According to the plaque on the bridge it was completed in July 1838.

In February 1841 the grateful inhabitants of the town presented Forth with an address and a piece of plate - a silver salver with Captain Forth's coats of arms and an inscription reading:

*Presented to Frederick Forth Esq, late Captain 21st Fusiliers, as a testimony of regard for his gratuitous exertions in the erection of the bridge and general improvements of Campbell Town by the inhabitants of that district.*

## **Maintenance of Red Bridge**

In 1918, the Council Clerk of Campbell Town reported that the foundation of the north-west wing wall of the bridge appeared to be undermined and might collapse. The Sub-Inspector, Robert Tait, inspected the bridge and apparently found the situation less serious, although reporting that the wing wall was a 'little undermined' and required attention. Works costing £36 were approved on 7 March 1918 but are not described in the files. [AOT file PWD 35/7, Council Clerk of Campbell Town to Engineer in Chief, 5 February 1918; Report of Sub-Inspector, 1 March 1918 and attached memos.]

Current files of maintenance on the Red Bridge begin in 1938. That year marked the bridge's centenary, and the Campbell Town Council were concerned that the bridge was in good repair for the occasion. The Bridge Engineer inspected the bridge and found it to be in a very well preserved condition but recommended that the ashlar work and the worst of the brick work be painted with a dilute solution of hydrochloric acid and, when dry, cleaned off with a wire brush - the remainder of the brick work could be simply cleaned with a scrubbing brush and hose. At the same time missing bricks were replaced with new bricks and the area repointed, and the letters indicating the mileage were cut clean and painted with black paint. [Department of Infrastructure, Energy and Resources file B 1349, Council Clerk, Campbell Town to Director of Public Works, 9 February 1938; Report by Bridge Engineer, 15 March 1938.]

Only minor repairs were carried out during the 1960s, some sandstone coping having to be replaced. It had been the intention of the Department to replace the coping with concrete but at the time sandstone coping was used to replace the missing or damaged fabric. [ibid., Council Clerk, Campbell Town to Minister for Lands and Works, 14 November 1968 and Director of Public Works to Minister, 25 November 1968.]

In October 1987 the Council Clerk of Campbell Town sent a series of photographs to the District Engineer North East highlighting the poor condition of the masonry due to age and the increase in traffic. He also pointed out that the following year the bridge would be 150 years old.

In 1990 a program of works, to reconstruct the road surface to lower the level of the road while at the same time installing a membrane to stop the seepage of water to the voussoirs, was drawn up. The cost of this schedule was nearly \$86,000 only \$45,000 of which had been approved based on earlier estimates of only part of the work. [ibid., Bridge Maintenance Supt. to A/DEB, 15 May 1988; Report, 8 April 1988; DEB to Assistant Director Design, 24 April 1989; Estimate, 20 September 1990.]

## **Rehabilitation and Strengthening of the Bridge**

In 1994 load testing was carried out on the bridge under the supervision of Graeme Nichols and this proved that the bridge did not have sufficient strength to carry current heavy truck loads without damage to the bridge fabric. As heavy vehicles traversed the bridge localised separation of the brick rings was observed below the wheel path.

In 1995-96 a draft Conservation Management Plan for Red Bridge was prepared by Nigel Lewis Richard Aitken Pty Ltd, but this was not finalised until July 1999 on completion of the structural analysis by P Selby-Smith from GHD, Melbourne Office. This analysis proved that the bridge had insufficient load carrying capacity to carry modern truck axle loads and strengthening was required to protect the long-term integrity of the bridge.

A funding submission was prepared by the Tasmanian Department of Infrastructure, Energy and Resources, and funding for strengthening works and masonry repair was provided by the Federal Government.

In 1999, Expressions-of-Interest for the proposed restoration and strengthening work were called by the Department of Infrastructure, Energy and Resources and Van Ek Contracting was selected from the applicants as the preferred tenderer. The tender document was written by GHD.

In 2000 a contract for strengthening and repair works of the bridge including training walls was let to Van Ek Contracting. Van Ek's team included Cintec Australasia, Bill Jordan (consulting engineer), and Gifford and Partners of England (structural engineers). The Cintec Archtec system, which originated in the United Kingdom, was used for strengthening the arches. This involved the installation of 54 grouted stainless steel bars. Other work carried out included:

- Investigation of foundations
- Pressure grouting to re-grout the masonry arches
- Surface treatment of the brickwork and sandstone
- Repointing of arches and walls
- Replacement of brickwork and stonework
- Investigation of arch strength
- Waterproofing of the deck
- Rehabilitation of road pavement and resealing of approaches
- Stabilisation of the north-west training wall
- Cleaning of masonry

All work was carried out under traffic and disruption to traffic flow was minimal.

## PEOPLE

### **Captain Alexander Cheyne (1785-1858)**

Alexander Cheyne was born in Scotland. He was apprenticed to an iron founder, and subsequently continued studies with the Royal Engineers. He was commissioned in 1806. After postings in England, Scotland and Ireland, he served with distinction in the Peninsula War, and was promoted to Captain in 1811. He retired on half pay in 1817. He was a director of the Glasgow Edinburgh Union Canal in 1822. In 1833 he sold out of the Army and sailed for King George Sound, Western Australia, where he became a Justice of the Peace and directed public works.

Governor Arthur encouraged him to move to Van Diemen's Land (VDL), and appointed him Director of Roads and Bridges on his arrival in December 1835. Red Bridge was a major early project carried out by the Roads and Bridges Department under his direction. He selected the site for this bridge, upstream of the existing bridge. His name is commemorated in a stone on the bridge parapet.

Sir John Franklin succeeded Arthur as Governor in 1837, and in 1838 promoted Cheyne to be the first Director of Public Works. This position combined responsibility for public buildings with that for roads and bridges. The resultant Public Works Department then continued to have an important role in the development of VDL / Tasmania for nearly the next 140 years.

Cheyne was opposed to the assignment system for convicts, under which they could become effectively domestic slaves for individual property owners. He favoured the new system of probation with gangs of about 200 workers and a gradual system of rehabilitation and incentives. This system was used for Red Bridge. He was dismissed by Franklin in 1841 after a disagreement about the assignment system being unjust, and delays in full implementation of the probation system. He appealed his dismissal to the Colonial Office in London, but his name was not cleared until 1844, after Eardley Wilmot succeeded Franklin as Governor. By this time he was in financial difficulties. Thereafter he held a number of more minor works related positions with the government and municipal authorities. He was elected an alderman of Hobart City in 1858 and died later that year.

### **Captain Frederick H A Forth (1808-1876)**

Frederick Forth was a Captain with the 21<sup>st</sup> (Royal North British) Fusiliers when that regiment embarked in 1832-33 in charge of convicts bound for New South Wales and VDL. The regiment remained in VDL on convict guard duties until 1839.

In 1833 he was appointed by Governor Arthur as the first visiting magistrate in VDL, and also some road gangs were placed under his supervision. In 1836 he was appointed Police Magistrate for the District of Campbell Town. Here, in addition to magisterial duties, he supervised the construction of public works by convict labour, including the probation station, several miles of road, and Red Bridge. He appears to have been a very capable organiser.

Following the dismissal of Cheyne, Forth was appointed in 1841 as the Director-General of Roads under the new Director of Public Works, William Kay, who arrived from England in 1842. Following the arrival of the new Governor, Sir William Denison, in 1847, and a restructuring of departments, Forth was dismissed that year despite his impressive

achievements. He objected strongly to his dismissal, and was provided with free passage back to England for himself and family in 1848.

Subsequently Forth was Council President (Administrator) of the Turks and Caicos Islands in the Bahamas 1848-54, and Treasurer of Hong Kong 1856-71.

### **James Blackburn (1803-1854)**

James Blackburn, civil engineer, architect and surveyor, was born in Essex, England. As a young man he was concerned with building and engineering works. In 1833 he was an inspector for the Commissioners of Sewers in London, but in financial difficulties. He was convicted for forgery of a large cheque, and sentenced to transportation for life, despite commendatory character references.

On arrival in Hobart later in 1833, he was immediately assigned to the Roads and Bridges Department. There, and later in the Public Works Department which absorbed it, he designed many and varied projects which were documented over Cheyne's signature. The design of Red Bridge in 1836 is believed to be his work, and the local park at the northern end is named for him. The attention to architectural detail in this bridge is typical of his work.

Blackburn was a skilled designer and engineer who added a fineness of detail to public structure missing in the works of J L Archer before him. Blackburn's works included the Grange (Campbell Town), Holy Trinity Church (Hobart), St George's Church (Battery Point), St Matthews Church (Rokeby) and St Marks Church (Pontville).

After remarkable support from leading citizens of Hobart, he was given a free pardon in 1841. He then set up in private practice as an architect/engineer. For some projects he joined another emancipated convict architect/engineer, James Alexander Thomson, in partnership. In 1847 the partners submitted a design for the first Bridgewater Bridge over the River Derwent. In 1848 they were awarded a contract to construct this bridge, and it was completed in 1849. The 290m long bridge connected to the northern bank from the causeway already constructed from the southern bank, and replaced a temporary ferry. The bridge was an all timber structure, with typical spans of 9.8m and an opening navigation span.

In 1849 Blackburn moved to Melbourne, where he was appointed City Surveyor and designed the original Melbourne water supply from the Yan Yean reservoir. He was injured in a fall from a horse in 1852, and died of typhoid fever in 1854.

# HERITAGE ASSESSMENT

## Historical Significance

The completion date of Red Bridge according to the plaque on the bridge was in July 1838 and the bridge has been in continuous use since that date.

There are at least six bridges completed in Australia before Red Bridge which still survive. Four of these are Tasmanian bridges - Richmond 1824, Kerry Lodge at Jingers Creek 1835, Tacky Creek 1836 and Ross 1836. Horseshoe Bridge 1833 and Lansdowne Bridge 1836 are both in New South Wales. Restdown 1838 (Tas) and four pre-1839 Norfolk Island bridges were completed about the same time as Red Bridge. Certainly Red Bridge is amongst the dozen oldest surviving bridges in Australia.

The three spans of 7.6m are not particularly significant in size for an arched bridge of this age. However, Red bridge demonstrates the use of convict labour gangs to build public infrastructure in the first half of the 19<sup>th</sup> century, and the use of locally available materials as a building source; in this case, clay for the bricks as opposed to freestone (sandstone) at the Ross Bridge and bluestone (dolerite) at Perth.

The Red Bridge was an important component of Governor Arthur's strategy to upgrade the route from Hobart to Launceston.

## Historic Individuals or Association

The bridge is associated with the following prominent colonial officials:

- ◇ Lieutenant Governor George Arthur - who approved the construction
- ◇ Inspector of Roads Roderic O'Connor - who recommended construction of the **three** arched bridge in 1834
- ◇ Director of Public Works Alexander Cheyne - who was responsible for the construction of the bridge
- ◇ Captain Frederick H A Forth - who supervised the construction

There is a body of opinion which supports the theory that convict architect and engineer James Blackburn (1803-1854) was the designer of the bridge as he was working with the Roads and Bridges Department at the time. The use of brick, the strong architectonic design and the confident, functional form of the wing walls all add weight to this Blackburn attribution.

## Technical Achievement

Special significance is attached to Red Bridge since it was designed as part of the urban form of Campbell Town. Red Bridge is unmistakably an urban rather than a rural bridge, and is relatively sophisticated for its date of construction, especially in the Tasmanian context. The construction of the bridge permitted the continuation of Scott's grid plan for Campbell Town, and involved the Elizabeth River being channelled to conform to the grid plan for one crucial block, as well as the construction of a high viaduct to provide an effective link to the grid plan south of the river. The extended abutments and the manner in which the river has been

realigned like a canal at this location contribute to the urban form based on European precedents. The urbanity of the Red Bridge is mirrored in the township it serves, and Campbell Town is a celebration of grid planning.

The use of brickwork also provides a note of modernity in a colony more used to stone. The use of brick can also be linked to several of Campbell Town's most significant buildings, especially The Grange, the former Wesleyan Chapel and St Luke's Sunday School.

## **Research Potential**

This bridge provides a useful case study in strengthening an historic arch bridge to take modern design loading. It is believed that this was the first time the Cintec Archtec system has been used to strengthen a masonry arch bridge in Australia.

## **Social Impact**

Red Bridge formed a major river crossing on the Midland Highway and was one of several substantial bridges on this route. At the date on the first bridge in Campbell Town (1822) the Midland Highway was little more than a track, ill-formed, unmetalled for most of its length, and still relying on fords at several river crossings. By 1838, however, the Midland Highway led over Red Bridge, the Ross Bridge and several other impressive engineering works. There is no doubt that Red Bridge served as a generator of town development.

The bridge is an integral part of Campbell Town, a fine example of an early colonial Australian township, the special qualities of the township derive from the elevated site contrasting with the Elizabeth River plains, the grid town plan, and the bridge marking the edge of the township.

## **Rarity**

All of the bridges in Australia which are as old as or older than Red Bridge are stone arched bridges. Red Bridge is the oldest (substantially) brick bridge in Australia. Red Bridge is rare for its use of substantial integral river training walls for a pre-1850 bridge and the oldest bridge on the National Highway network.

## **Representativeness**

Red Bridge is a fine example of a colonial arch bridge constructed from red bricks. The bridge incorporates long training walls which channel the river which was re-aligned to remove a significant meander. These factors contribute to the urban appearance of the bridge which is very similar to canal bridges being constructed in Britain at this period of time.

Red Bridge is unique amongst colonial bridges constructed in the pre-1850 era.

## **Integrity/Intactness**

The bridge is in substantially original condition and well maintained. It has been recently rehabilitated and strengthened to carry SM1600 loading in accordance with latest Australian Bridge Design Code.

## STATEMENT OF SIGNIFICANCE

Red Bridge on the Midland Highway at Campbell Town, Tasmania, is a fine example of a colonial arch bridge. Completed in 1838, this bridge has been in continuous use since then. It is one of the oldest surviving bridges in Australia, and is the oldest brick bridge. It is also the oldest bridge on the National Highway network.

The construction of Red Bridge was instituted by Lieutenant-Governor George Arthur as part of his upgrading of the most important transport route in the colony of Van Diemen's Land. The project was the responsibility of Captain Alexander Cheyne, and Captain Frederick Forth was the construction supervisor on site. Both men held prominent roles in the rapid development of roads and bridges in the colony.

The design is believed to be by renowned convict architect/engineer James Blackburn, and shows great attention to architectural detail. In comparison with other pre-1850 Australian bridges, Red Bridge is very urban. The channelling of the river, with river training walls integral with the bridge, is an unusual feature.

The bridge was built by convict work gangs, with 220 men employed at the peak. In a departure from previous practice, brick was chosen as the main construction material to utilise the locally available clay, and avoid transporting large quantities of stone. The fully integrated operation, with the brickworks located adjacent to the bridge, was a notable achievement.

The bridge is a key part of, and focus for, Campbell Town, a fine example of a colonial Australian township.

The arches were internally strengthened in 2000, using an innovative system of grouted stainless steel bars.

**Level of Award Recommended: National**



# INTERPRETATION PLAN

## Interpretation Plan Title: RED BRIDGE, CAMPBELL TOWN

**Location:** It is proposed to erect the Engineering Heritage Marker and Interpretation Panel adjacent to the north east training wall at the southern end of Blackburn Park.

**Panel Size:** Blackburn Park already contains a sizeable information panel erected by the Northern Midlands Council which is located about 50m north of the bridge – refer to Photo 7 in the Modern Photographs section of this document.



It is proposed to use a Standard Panel 1200mm wide x 600mm high and include the following information:

1. History and original construction with more emphasis on engineering achievements
2. Strengthening work
3. Photographs
4. National marker
5. Logos for State Government, Northern Midland Council, Engineers Australia
6. QR Code and URL

### Proposed Text:

Red Bridge, carrying the Midland Highway over the Elizabeth River, is an historic three span brick arch structure, completed in 1838, and has been in continuous use since then. It is one of the oldest surviving bridges in Australia, and is the oldest brick bridge. It is also the oldest bridge on the National Highway network.

The construction of Red Bridge resulted from Lieutenant-Governor George Arthur's emphasis on road and bridge construction in the colony of Van Diemen's Land. This bridge replaced an earlier flood-prone earth and log causeway located some 200m downstream. The river was



diverted to a canal-like channel near the bridge, and the integral river training walls on both upstream and downstream sides are a feature of the bridge.

The project was the responsibility of Captain Alexander Cheyne, Director-General of Roads and Bridges, whose name is remembered on the bridge. There are no extant original drawings, but the designer of Red Bridge is believed to be renowned convict architect and engineer James Blackburn. The design shows great attention to aesthetic and architectural details. The construction supervisor on site was Captain Frederick Forth (who later succeeded Cheyne as Director-General of Roads and Bridges). The work was carried out by convict work gangs, chosen, where possible, to include the more willing and skilled workers. At its peak, the project employed 220 men including five teams of brickmakers and a stone cutter.

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Following concerns about the arch deflections occurring under heavy trucks, and the associated loss of mortar, an arch was load tested and analysed in 1994. The results led to a Conservation Plan being prepared, and funding obtained for bridge strengthening and rehabilitation works. These works were then carried out in 2000.

The arches were strengthened internally using the Cintec Archtec system, to carry current design truck loading. This involved installation of grouted stainless steel reinforcement bars in each brick arch, tangential to the curve. All the lost mortar in the arches was restored.

## REFERENCES

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*Van Diemen's Land Annual 1834*.

## ACKNOWLEDGEMENTS

Historical Research 1995-96:

Lindy Scripps

Conservation Management Plan July 1999:

Nigel Lewis Richard Aitken Pty Ltd  
Graeme Corney  
Graeme Nichols

Structural Analysis August 1998:

Peter Selby-Smith, GHD

## EARLY PHOTOGRAPHS AND PLANS

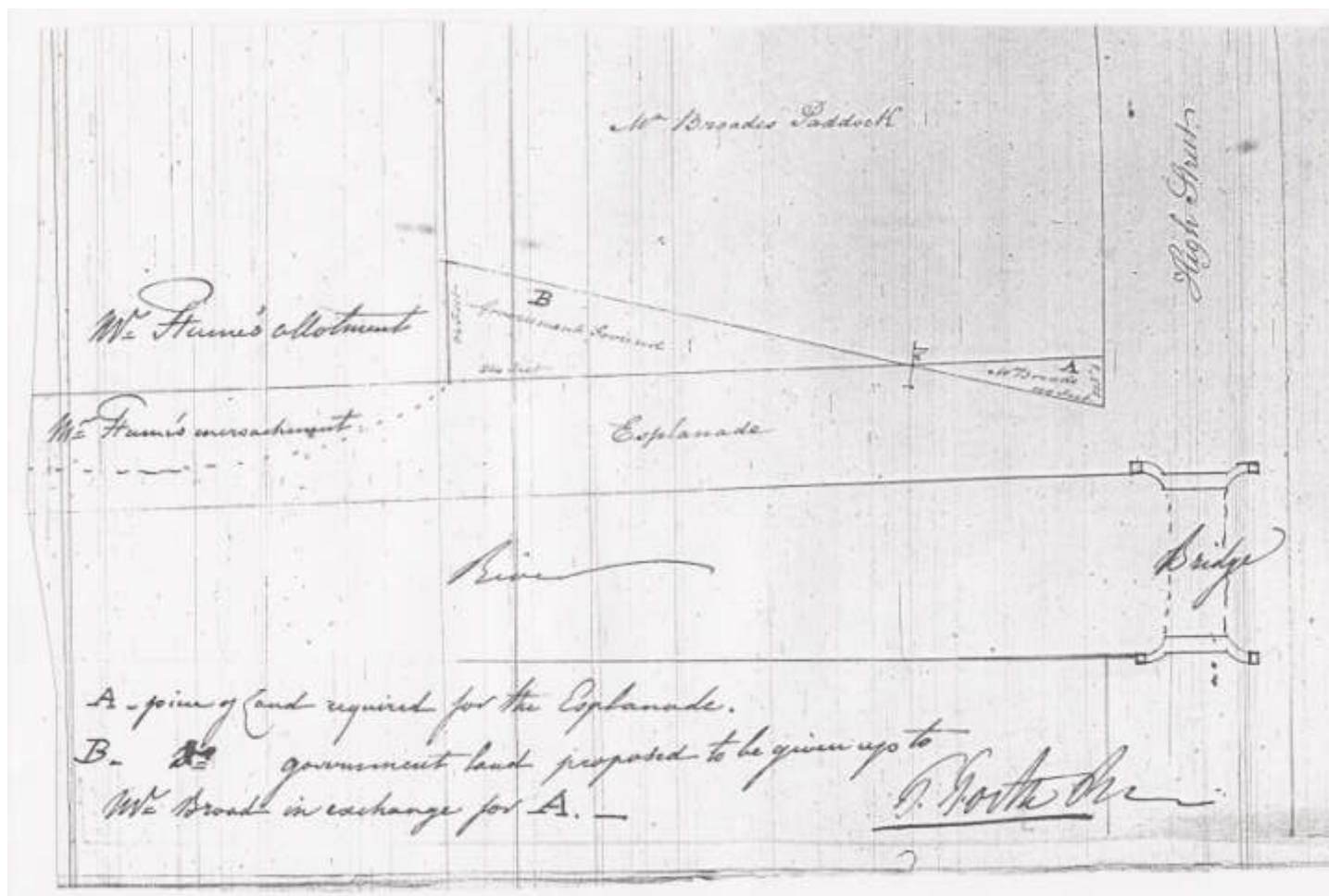


Figure 1: The site of the bridge at Campbell Town, September 1837. [LSD 1/9/155]

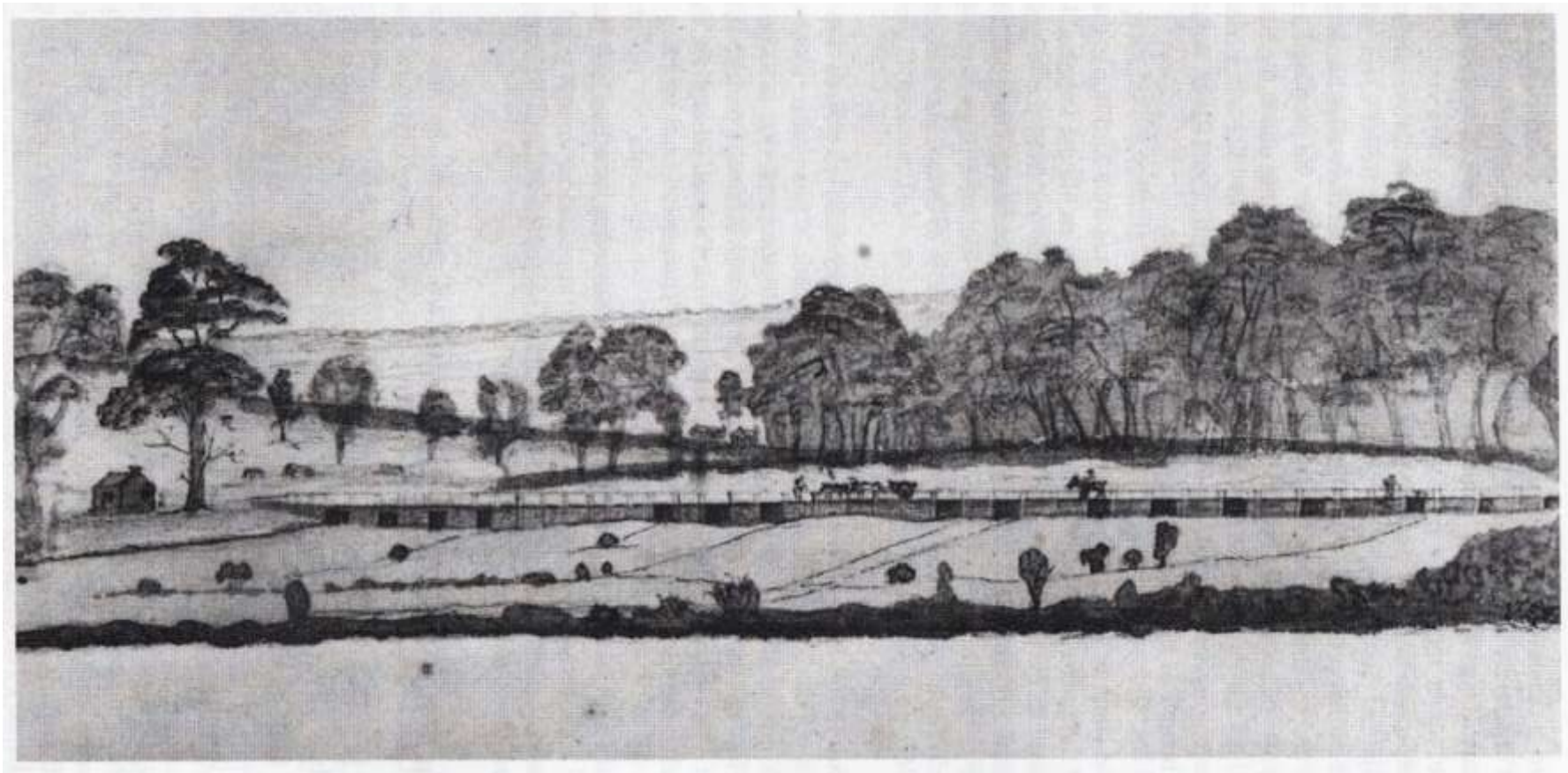


Figure 2: “Bridge over the Elizabeth River at Campbell Town, for the west, 3 November 1823, water colour by Thomas Scott. [Mitchell Library]



Figure 3: The main street of Campbell Town c 1860s. [AOT photo 30/2075]





Figure 4: Red Bridge at Campbell Town c 1920s [AOT photo 30/4432]



Figure 5: “The old bridge at Campbell Town” [Weekly Courier 9 June year? p.17]



Figure 6: The bridge at Campbell Town, Undated. [From the Collection of the Queen Victoria Museum and Art Gallery QVM:1986:P:425].



## MODERN PHOTOGRAPHS



Photo 1: View of Red bridge from the south west



Photo 2: South east training wall



Photo 3: View of arch showing details of brickwork



Photo 4: View of north east corner of bridge and Blackburn Park





Photo 5: View of the southern abutment

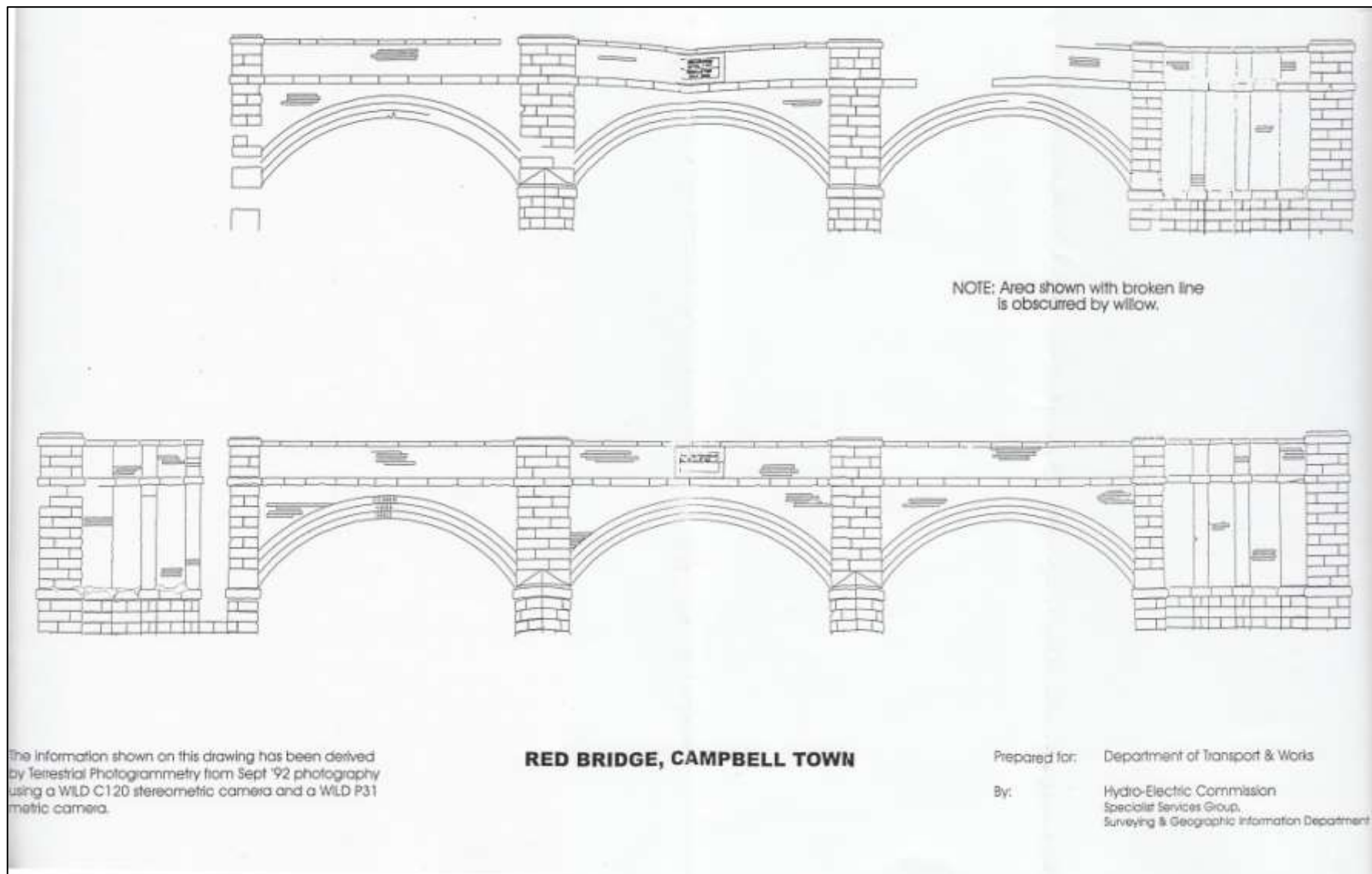


Photo 6: Northern side of southern arch, showing repointing, mortar loss and leaching prior to restoration in 2000.

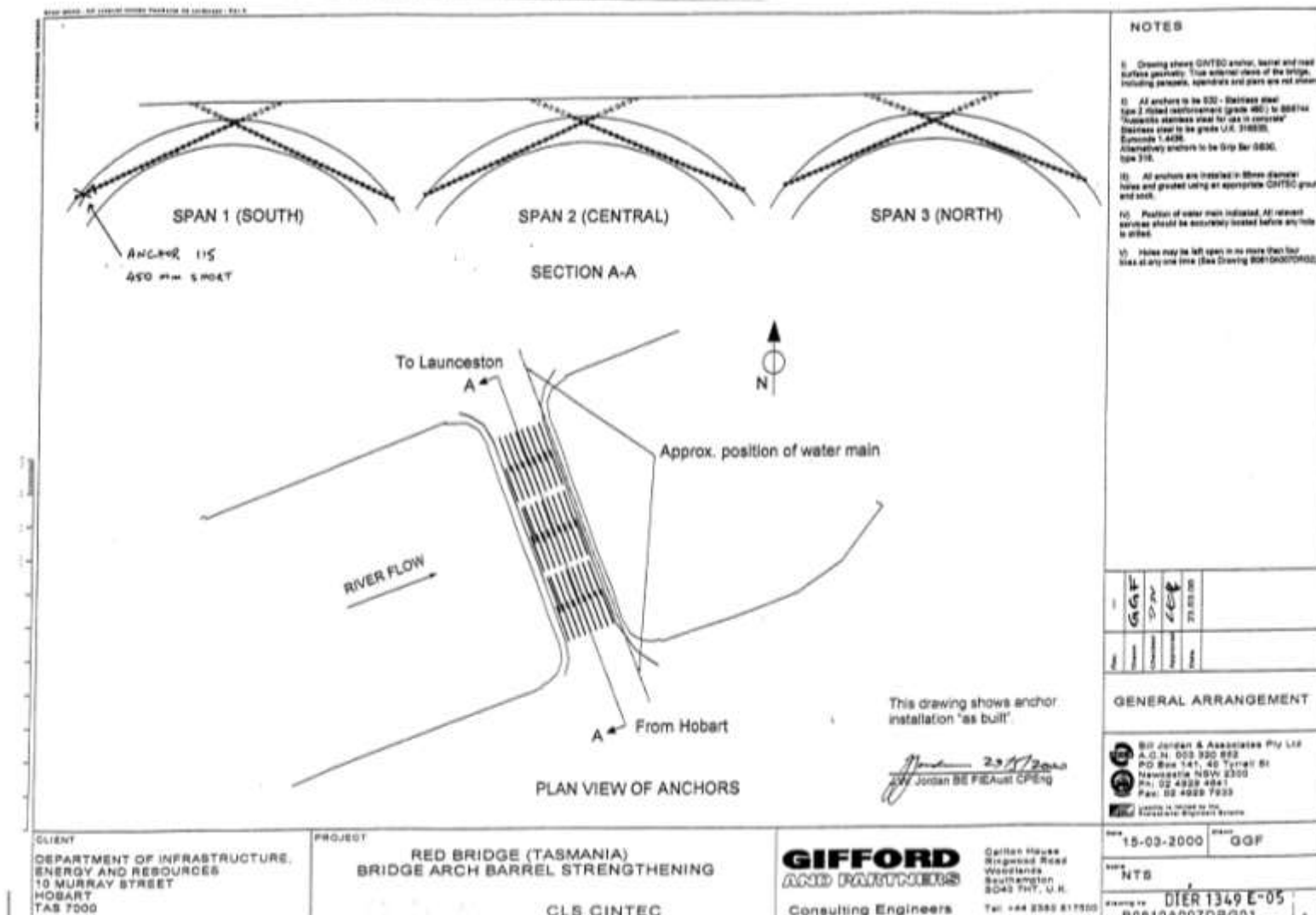


Photo 7: Details of Interpretation Panel erected by Council in Blackburn Park

## DRAWINGS







Red Bridge Strengthening – Layout of Cintec Anchors